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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,992	06/25/2003	Dan Daeweon Cheong	356828001US1	4507

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EXAMINER

MARKHAM, WESLEY D

ART UNIT PAPER NUMBER

1762

DATE MAILED: 03/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/606,992

Applicant(s)

CHEONG, DAN DAEWEON

Examiner

Wesley D. Markham

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-26 and 28-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-26 and 28-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Acknowledgement is made of the amendment filed by the applicant on 1/26/2006, in which Claim 25 was amended, Claim 27 was canceled, and five (5) sheets of replacement drawings depicting all five figures were submitted. **Claims 24 – 26 and 28 – 45** are currently pending in U.S. Application Serial No. 10/606,992, and an Office action on the merits follows.

Drawings

2. The drawings (5 sheets, 5 figures) filed by the applicant on 1/26/2006 are acknowledged and approved by the examiner. As such, the objection to the drawings set forth in paragraph 3 of the previous Office action (i.e., the non-final Office action mailed on 9/26/2005) is withdrawn.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. The rejection of Claim 27 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, set forth in paragraph 6 of the previous Office action, is withdrawn in light of the applicant's amendment to cancel Claim 27.

5. Claims 25 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
6. The term "proximate" in **Claim 25** (from which **Claim 26** depends) is a relative term which renders the claims indefinite. The term "proximate" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Specifically, amended Claim 25 requires, in part, that the coating rate monitors be placed "proximate to the substrate". The examiner has reviewed the applicant's specification and notes that the term "proximate" is not defined or described in the context of the claimed limitation. Additionally, the term "proximate" does not appear to have an art-recognized definition in the context of the claimed invention (i.e., in regards to the relative location of coating rate monitor(s) and a substrate). As such, it is unclear to one skilled in the art how close the coating rate monitor(s) must be located to the substrate to be considered "proximate" to the substrate, as required by Claims 25 and 26, and the scope of the claims is unclear.
7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 24 – 26 and 28 – 45 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, independent **Claim 24** (from which **Claims 25, 26, and 28 – 44** depend) and independent **Claim 45** require, in part, that the temporal variation of the deposits be independently controlled by independently monitoring and continuously varying the rates of deposition of the components of the deposit(s) to obtain continuous homogeneous temporal deposition of the composition on the substrate. This limitation is not supported, either explicitly, implicitly, or inherently, in the specification as originally filed. In other words, while the originally filed specification did disclose simultaneously effecting vapor deposition of first and second deposits and determining temporal variation of the deposition of the components from the first and second deposits onto a substrate, wherein the temporal variation of each of the deposits is independently controlled by independent, shielded monitoring systems, the specification did not disclose continuously varying the rates of deposition of the components of the deposits onto the substrate to obtain continuous homogeneous temporal deposition of the composition. As such, Claims 24 – 26 and 28 – 45 contain subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Additionally and

regarding **Claim 45**, the claim requires, in part, "independently monitoring and continuously varying the rates of deposition of said components of at least one of said deposits...". However, the specification as originally filed did not disclose or suggest only monitoring the deposition rate of one of the deposits (see, for example, Figure 1 and pages 4 – 7 of the specification of the instant application (particularly page 7, lines 10 – 19), in which the applicant clearly discloses that two or more sources are monitored / controlled in the present invention). Therefore, Claim 45 literally reads on an embodiment not originally disclosed or suggested in the originally filed specification (i.e., monitoring the deposition rate of only one of the deposits) and contains subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

9. Applicant's arguments filed on 1/26/2006 and regarding the above 35 U.S.C. 112, first paragraph, rejections have been fully considered but they are not persuasive. Specifically, the applicant refers to several sections of the specification and argues that the aforementioned sections adequately disclose the claimed invention. In response, the examiner has reviewed the cited portions of the specification, as well as the specification as a whole, and maintains that, in the context of the claimed method, the limitation of continuously varying the rates of deposition of the components of the deposit(s) to obtain continuous homogeneous temporal deposition of the composition on the substrate is not disclosed by the originally filed

specification. For example, the applicant argues that the specification discloses a “computer-based feedback system” used to control the “evaporation rate” of each of the source materials (page 9 of the specification). The applicant then makes several assumptions about the “computer-based feedback system” (e.g., that the sensing element provides measurements to a controller; the controller calculates and delivers an output to a control element (e.g., a source heater) based on a user desired setpoint (e.g., a setpoint based on stoichiometry); and the controller then further monitors the sensing element to see if further adjustment is necessary). However, the assumptions about the “computer-based feedback system” made by the applicant are not taught or suggested by the originally filed specification. In other words, the originally filed specification does not disclose or suggest that the “computer-based feedback system” works in the manner argued and assumed by the applicant. Based on the assumptions about the “computer-based feedback system”, the applicant argues that, “the computer-based feedback system can continuously vary the rates of deposition to obtain continuous homogeneous temporal deposition”. Even if the applicant’s assumptions about how the originally disclosed “computer-based feedback system” works were supported by the specification (which they are not), the applicant’s original disclosure does not teach or suggest continuously varying the rates of deposition of the components of the deposit(s) to obtain continuous homogeneous temporal deposition of the composition on the substrate. For example, the original specification does not disclose whether the “computer-based feedback system” monitors and controls the

deposition process at various intervals throughout the process (intermittently) or continuously throughout the deposition process. As such, there is certainly no disclosure or implication that the "computer-based feedback system" disclosed by the applicant could or should continuously vary the rates of deposition of the components of the deposit(s) to obtain continuous homogeneous temporal deposition of the composition on the substrate. Regarding Claim 45, the applicant argues that, according to page 11, lines 33 – 34 of the specification, the disclosed method permits control of the relative rates of deposition from more than one source. The applicant concludes that, "this implies that the relative rate of deposition can be controlled from one source". This argument is not convincing. The applicant's argument appears to be that a disclosure of controlling "more than one source" is sufficient to disclose controlling a single source. This is simply not the case. The specification as originally filed did not disclose or suggest only monitoring the deposition rate of one of the deposits (see, for example, Figure 1 and pages 4 – 7 of the specification of the instant application (particularly page 7, lines 10 – 19), in which the applicant clearly discloses that two or more sources are monitored / controlled in the present invention). Therefore, Claim 45 literally reads on an embodiment not originally disclosed or suggested in the originally filed specification (i.e., monitoring the deposition rate of only one of the deposits) and contains subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. **Claims 24 – 26, 33, 34, 37, 41, 42, and 45** are rejected under 35 U.S.C. 102(b) as being anticipated by Kanda et al. (USPN 5,089,104) for the reasons set forth in paragraph 11 of the previous Office action. In regards to the new limitations required by amended Claim 25, Kanda et al. also teaches that the coating rate monitors “11” are placed outside of the sources “5”, “6”, “7”, and “8” and proximate to the substrate “10” (Figures 2 and 3; Col.5, line 65 – Col.6, line 28).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. **Claims 30, 31, and 38** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanda et al. in view of Fuyama et al. (USPN 4,857,802) for the reasons set forth in paragraph 14 of the previous Office action.

14. **Claims 24 – 26, 28, 29, 32, 33, 35 – 37, 41, 42, and 45** are rejected under 35 U.S.C. 103(a) as being unpatentable over Velthaus et al. (USPN 5,505,986) in view of Kanda for the reasons set forth in paragraph 16 of the previous Office action. In regards to the new limitations required by amended Claim 25, Kanda et al. also teaches that the coating rate monitors “11” are placed outside of the sources “5”, “6”, “7”, and “8” and proximate to the substrate “10” (Figures 2 and 3; Col.5, line 65 – Col.6, line 28).

15. **Claims 30, 31, and 38** are rejected under 35 U.S.C. 103(a) as being unpatentable over Velthaus et al. (USPN 5,505,986) in view of Kanda, in further view of Fuyama et al. for the reasons set forth in paragraph 18 of the previous Office action.

16. **Claim 34** is rejected under 35 U.S.C. 103(a) as being unpatentable over Velthaus et al. (USPN 5,505,986) in view of Kanda, in further view of Wu et al. (USPN 5,432,015), for the reasons set forth in paragraph 20 of the previous Office action.

17. **Claims 39, 40, 43, and 44** are rejected under 35 U.S.C. 103(a) as being unpatentable over Velthaus et al. (USPN 5,505,986) in view of Kanda, in further view

of Fuyama et al. and Wu et al., for the reasons set forth in paragraph 22 of the previous Office action.

18. **Claims 24, 28, 29, 32, 33, 35 – 37, and 39 – 45** are rejected under 35 U.S.C. 103(a) as being unpatentable over Velthaus et al. (USPN 5,505,986) in view of Shimoyama et al. (USPN 5,372,837), for the reasons set forth in paragraph 24 of the previous Office action.

19. **Claims 25 and 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Velthaus et al. (USPN 5,505,986) in view of Shimoyama et al., in further view of McKee et al. (USPN 5,906,857).\

20. The combination of Velthaus et al. and Shimoyama et al. teaches all the limitations of **Claims 25 and 26** as set forth in paragraph 24 of the previous Office action, except for a method wherein the coating rate monitors "17" and "21" are each shielded from the other. Please note that Shimoyama et al. does teach that the monitors are placed outside of the sources (Figures 2 and 5), as required by the claims. Velthaus et al. teaches that the materials are, for example, evaporated out of an effusion cell (Col.3, lines 1 – 10), and it is clear from Figure 5 of Shimoyama et al. that each coating rate monitor should only measure the flux of material emitted from its corresponding coating material source. McKee et al. teaches positioning coating rate monitors within each effusion cell during a multi-component film deposition process so that information about the emission of atoms from each source can be

continuously monitored (Figures 1, 3, and 10; Col.10, lines 42 – 54). The monitors “84” are located in a collar above the crucible mouth (i.e., outside of the sources, as required by the claims) (Col.5, line 64 – Col.6, line 10). Therefore, it would have been obvious to one of ordinary skill in the art to locate the coating rate monitors of the combination of Velthaus et al. and Shimoyama et al. to be isolated from each other (e.g., above the source and within the appropriate effusion cell) so that each monitor only measures the amount of material emitted from a desired source and there is no “cross-contamination” of the coating monitors (which would be expected to reduce the accuracy of the process). Regarding the “proximate to the substrate” limitation, the examiner notes that coating rate monitors taught by the prior art (McKee et al. and Shimoyama et al.) are located between the source(s) and the substrate and in close enough proximity to the substrate so that the evaporated / vaporized coating material reaches both the coating rate monitor and then the substrate. As such, the coating rate monitors are reasonably construed to be “proximate to the substrate”.

Response to Arguments

21. Applicant's arguments filed on 1/26/2006 have been fully considered but they are not persuasive.
22. Regarding the 102 and 103 rejections based, at least in part, on Kanda et al., the applicant argues that Kanda does not teach or suggest directly monitoring “the rate of deposition” of the components onto the substrate. Specifically, the applicant

argues that monitoring the concentration of the vapor species in the vicinity of the substrate (as taught by Kanda) will not reliably determine the rate of deposition because other factors (velocity, sticking coefficient, etc.) also contribute to the deposition rate. In response, this argument is not convincing. During the examination process, claims are to be given their broadest reasonable interpretation. In the instant application, the claims require independently monitoring the rates of deposition of the components. Contrary to the applicant's arguments, the claims do not require directly monitoring the rate of deposition of the components onto the substrate. In fact, there is no limitation at all placed on the specific deposition rate monitoring method used in the claimed invention. As noted by the applicant, Kanda et al. teaches monitoring the composition / concentration of the vaporized species that are depositing on the substrate. By doing so, the deposition rate of each species is, at least indirectly, monitored as well because the deposition rate is based on the concentration monitored by Kanda. The examiner's position is supported by Kanda et al.'s teaching that the deposition rate on the substrate and the composition of the material being deposited are linked (Col.1, lines 18 – 26).

23. Regarding the 35 U.S.C. 103 rejections based, in part, on Shimoyama et al., the applicant argues that Shimoyama et al. teaches placing a shutter in front of the deposition rate monitors such that the monitor can only be turned on at specific short periods of time during the deposition process. As a result, the lifetime of the monitor can be prolonged. The applicant argues that Shimoyama et al. teaches away from the claimed process of continuously monitoring and varying the rates of deposition

because of Shimoyama et al.'s teaching that the deposition rate monitor may expire before the deposition process is completed. In response, this argument is not convincing. As noted by the applicant, the preferred embodiment of Shimoyama et al. is one in which the monitoring process only takes place during specified periods of time (intermittently) during the deposition process. However, the use of patents as references is not limited to what the patentees describe as their own inventions or to the problems with which they are concerned. They are part of the literature of the art, relevant for all they contain (MPEP 2123). A reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, including nonpreferred embodiments (*Merck & Co. v. Biocraft Laboratories*, 10 USPQ2d 1843 (Fed. Cir.)), and disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments (*In re Susi*, 169 USPQ 423 (CCPA 1971)). In the "Background of the Invention" section, Shimoyama et al. teaches that in prior art vapor deposition processes and apparatuses used to deposit phosphor (EL) layers in EL devices (i.e., devices such as those taught by Velthaus et al.), the rates of deposition of each of the components are independently and continuously monitored and controlled during the deposition process by, e.g., crystal oscillators (Figure 5; Col.1, line 39 – Col.2, line 27). This monitoring process provides the advantage of insuring that the deposited light emitting layer has precise thickness and uniformity (Col.2, lines 1 – 13). Shimoyama et al. describes the monitoring process as "essential" (Col.2, lines 15 – 18). Based on the above teachings, one of ordinary skill in the art would have been

motivated to continuously monitor and control the deposition rate of the components in the process of Velthaus et al. in order to insure that a high quality (uniform, homogeneous) film is deposited. One would have had a reasonable expectation of success in doing so, as Shimoyama et al. teaches that such a continuous monitoring and controlling process is conventional in the art of EL device manufacture. The fact that Shimoyama et al. teaches that intermittent monitoring is preferable to the prior art continuous monitoring does not "teach away" from the claimed invention or suggest that continuous monitoring is inoperative. In choosing the type of monitoring process to use, the benefits and drawbacks of each type of monitoring process (continuous vs. intermittent) would have been balanced by one of ordinary skill in the art depending on the specific process and product requirements (e.g., film thickness, degree of control, speed of the feedback control, etc.)

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D. Markham whose telephone number is (571) 272-1422. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


WDM

Wesley D Markham
Examiner
Art Unit 1762


TIMOTHY MEEKS
SUPERVISORY PATENT EXAMINER